Base from U.S. Geological Survey, 1955

MISCELLANEOUS FIELD STUDIES SHEET 2 OF 4

EXPLANATION

AREA BOUNDARY - Areas corresponding to previously mapped geologic units; numbers indicate probability of exploration

- Exploration frequent or continuous. Host rock favorable. Known

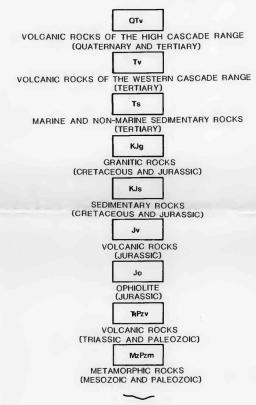
|| - Exploration intermittent. Host rock favorable. Known deposits depleted or low grade (includes tailings). Exploration stimulated by higher prices or by new concepts, methods, or

III - Exploration possible. Host rock favorable or concealed by younger formations. Few, if any, known deposits or prospects.

IV - Exploration unlikely. Host rock unfavorable for specific commodities. Since all rock types of all ages contain valuable

MINES AND PROSPECTS - Numbered deposits have significant production, reserves, or potential; see table

DESCRIPTION OF MAP UNITS



The data presented here are compiled on a generalized geologic map of the Medford $1^{\rm O}$ by $2^{\rm O}$ quadrangle (Smith and others, 1982). Its purpose is to aid in land-use planning and in resource analysis by indicating areas where mineral exploration for chromite, nickel, and asbestos is ongoing, intermit-

Frequency of exploration is highest in known mining districts, but other localities are re-examined when new concepts or new detectors are devised. Intensity of exploration is related to size and grade of deposits and current

The probability of exploration in an area is judged by the number and type of known deposits. Areas are outlined by boundaries at or near the contacts between favorable and less favorable host rock for the three commodities shown. The extent of each area is determined by the probable extent of favorable host rock without regard for accessibility or present restrictions

The probability of exploration within each outlined area is likely to remain fairly stable for several years or decades; it could be raised by new discoveries, but it is unlikely to be lowered since it is based on known

The Medford quadrangle contains podiform chromite deposits in the Klamath Mountains (of which the Syskiyou Mountains are a part), including Oregon's largest (the Oregon Chrome mine, no. 13) from which 32,000 long tons was produced. Average production from 225 other deposits was 209 long tons (Page

Average grade of ore at the Oregon Chrome mine was 45 percent chromium oxide ($\mathrm{Cr}_2\mathrm{O}_3$) with a chromium to iron ratio of 2.7 to 1 (Ramp, 1961, p. 53). Other deposits contained from 20 percent $\mathrm{Cr}_2\mathrm{O}_3$ (mill grade) to 59 percent $\mathrm{Cr}_2\mathrm{O}_3$ with chromium to iron ratios between 2 to 1 and 3 to 1.

The deposits are distributed about the same vertically and horizontally throughout the entire area of ophiolitic rocks (Page and Johnson, 1977). Because the deposits are clustered or in linear zones within dunite pods in

If a method of finding concealed deposits is developed, much of the area of ophiolitic rocks has a large potential for exploration (Thayer and Ramp,

The only significant production of nickel in the United States is from the Nickel Mountain (Riddle) laterite, where total production of the Hanna mine (no. 33) near Riddle through 1976 was 496,118,000 lbs of nickel from 39,272,000 tons of garnierite ore. Reserves are probably sufficient to last until about the year 2000 (Ramp, 1978, p. 63). No nickel has been produced from the 20 smaller laterite deposits or groups of deposits in the Josephine Peridotite (Cave Junction area), although the larger better grade deposits have production potential. One deposit of nickel sulfide at the Chisholm (Shamrock) mine (no. 64) has had no production, but it was explored prior to 1961. This deposit is 5 to 38 ft thick, 200 ft long, and 200 ft deep; it appears to be terminated by faults at both ends and at depth. It contains about 1.3 percent nickel, 1.1 percent copper, 0.07 percent cobalt, and 0.03 oz/ton platinum (Ramp, 1978, p. 57).

The potential for undiscovered deposits is low because laterite occurs only at the surface, is easily recognized, and has been prospected. Further exploration of the deposits tributary to a plant site in Illinois Valley is

There has been only a small production of hand-sorted tremolite.

One deposit of chrysotile is known (Foster, sec. 36, T. 38 S., R. 9 W.). Many areas of ophiolitic rock may merit future investigation but are not currently suitable for commercial development (Wagner and Ramp, 1969,

Page, N. J, and Johnson, M. G., 1977, Chromite resources of the podiform chromite deposits and exploration for concealed chromite deposits in the Medford-Coos Bay quadrangles, southwestern Oregon: U.S. Geological Survey Open-File Report 77-656, 14 p.
Ramp, Len, 1961, Chromite in southwestern Oregon: Oregon Department of

Geology and Mineral Industries Bulletin 52, 169 p. 1978, Investigations of nickel in Oregon: Oregon Department of Geology and Mineral Industries Miscellaneous Paper 20, 68 p.

Smith, J. G., Page, N. J, Johnson, M. G., Moring, B. C., and Gray, Floyd, 1982, Preliminary geologic map of the Medford 1° by 2° quadrangle, Oregon and California: U. S. Geological Survey Open-File Report 82-955, scale

Thayer, T. P., and Ramp, Len, 1969, Chromite, in Mineral and water resources

of Oregon: Oregon Department of Geology and Mineral Industries Bulletin 64, p. 108-116. Wagner, N. S., and Ramp, Len, 1969, Asbestos, olivine, and other magnesium silicate minerals, in Mineral and water resources of Oregon: Oregon Department of Geology and Mineral Industries Bulletin 64, p. 187-193.

deposits active or inactive, or many prospects. N - Nickel A - Asbestos tent, probable, or unlikely. harzburgite, the number of undiscovered deposits is potentially greater in areas having the most known deposits.

Geology generalized from Smith and others (1982)

NATIONAL GEODETIC VERTICAL DATUM OF 1929 CONTOUR INTERVAL 200 FEET WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS TRANSVERSE MERCATOR PROJECTION

Mineral Deposits And Probability Of Exploration For Chromite, Nickel, And Asbestos

MINERAL DEPOSITS AND PROBABILITY OF EXPLORATION, MEDFORD 1° BY 2° QUADRANGLE, OREGON AND CALIFORNIA Compiled By Roscoe M. Smith and Jocelyn A. Peterson

1 R 5 W 15'